Before the
Federal Communications Commission
Washington, DC 20554

In the Matter of SafeView, Inc. Request for Waiver of Sections 15.31 and 15.35 of the Commission's Rules to Permit the Deployment of Security Screening Portal Devices that Operate in the 24.25-30 GHz Range	)	ET Docket No. 04-373 DA 04-3038

WINSTAR COMMUNICATIONS, LLC REPLY COMMENTS ON SAFEVIEW'S REQUEST FOR WAIVER

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On behalf of Winstar Communications, LLC (hereinafter "Winstar") please find its reply comments to the Request for Waiver[1] in the above-referenced proceeding.

I. Introduction

Winstar provides terrestrial-based, private line services using predominately fixed, broadband communications in the area-wide licensed 38.60-40.0 GHz ("39GHz") and Local Multipoint Distribution Service ("LMDS" or "28GHz and 31GHz") bands. The Winstar area-wide licenses cover the entire country, Alaska, Hawaii and lower 48 states. Winstar also utilizes the point-to-point licensed microwave bands (including, but not limited to, 6GHz, 10GHz, 18GHz and 23GHz).

Winstar provides and offers private line and other fixed wireless services nationwide, including to airports. Inasmuch as SafeView's proposed application could potentially affect the ability of the exclusive licensee to provide high quality service, Winstar opposes the specifics of SafeView's request. The SafeView proposal is to deploy security devices in such sensitive areas as airports and other places with public access.[2] These devices -- shaped like tunnels with open ends -- openly radiate low-level emissions that could cause excess interference into fixed service stations whose antennas point toward the devices. The waiver request also directly undermines the purpose of auction-awarded exclusive licensing.

Winstar supports the main points made by XO Communications[3] and Hughes Network Systems ("HNS") in opposition to SafeView's request for waiver.[4] Winstar also places into the

[1] *See*, SafeView, *Request for Waiver*, ET Docket No. 04-373 (Aug. 18, 2004) [hereinafter SafeView Request].
[2] *See id*. at 1-2.
[3] *See* Letters from Russell H. Fox , Attorney, Mintz Levin Cohn Ferris Glovskey and Popeo PC on behalf of XO Communications (Sept. 15, 2004) and (Oct. 21, 2004) (on file with author).

record its letter of August 19, 2004 to Ed Thomas, Chief, Office of Engineering and Technology (See Annex 1).

II. Comments

A. Security

Winstar offers services nationwide, including to airports and other critical facilities using exclusive spectrum licenses. It makes no sense to allow a non-licensee system that exceeds Part 15 requirements and that causes interference to operate anywhere in an exclusive licensee's territory. The SafeView system is designed to operate in busy airports and other areas that by their nature contain large open spaces and large windows. If SafeView wishes to deploy a system that operates outside the Part 15 rule limits, especially in such a setting, then SafeView needs to approach the legitimate Fixed Service ("FS") license holder and seek an understanding about whether an appropriate commercial arrangement, such as a spectrum lease as contemplated under the Secondary Spectrum Market rules[5], is feasible.

B. The SafeView Device Design Forebodes Interference with Licensed Devices

The SafeView device consists of two columns of 192 antenna elements arranged vertically and transmitting by rotating about a central point in which a subject to be scanned stands.[6] During this rotation, each antenna element sweeps through a 5.75 GHz frequency range, located at 24.25-30 GHz[7], thus for a period of time potentially causing interference into victim FS receivers whose antennas may be pointing toward the device. The duration of such emissions is small, but with a succession of antenna emissions, the victim receiver could receive excessive interference for periods long enough to seriously degrade the performance of that receiver. SafeView argues that compared to the quiet times during the usage of the devices the active time is small enough not to affect the performance of the victim networks.[8] The SafeView proposal suggests this "duty cycle" is only –83 dB[9], which is in fact in error, as discussed in the HNS brief.[10]

SafeView's request for waiver of §15.31(c)[11] has major implications for the interference potential from the device. Under this provision, measurements should be made with the frequency sweeping stopped. As such, the provision implies that the field strength limits in §15.209[12] are peak values and not values averaged over the sweep interval. Waiver of §15.31(c)

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[4] *See* Comments of Hughes Network Systems, Inc., to the *Request for Waiver*, ET Docket No. 04-373 (Oct. 22, 2004) [hereinafter Hughes' Comments].
[5] *See In re* Promoting Efficient Use of Spectrum Through Elimination of Barriers to the Development of Secondary Markets, *Second Report and Order, Order on Reconsideration, and Second Further Notice of Proposed Rulemaking* 19 FCC Rcd. 17503 (2004).
[6] *See* SafeView Request at 6.
[7] *See id*.
[8] *See id*. at 6-7.
[9] *See id*. at 6.
[10] *See* Hughes' Comments at 9-10.
[11] *See* 47 C.F.R. § 15.31(c).
[12] 47 C.F.R. § 15.209

would convert the limits to the latter. SafeView's claim that the device would meet the average limit is shown below to be wrong. As such, waiving this provision of the Commission's rules would not be appropriate.

As shown in Annex 2 to these comments, the duty cycle for emissions within the pass band of a victim FS receiver is –27 dB for a 50 MHz victim channel bandwidth. From the information provided, the peak power is 0 dBm and thus the average power is–27 dBm. This exceeds by 14 dB the power implied by §15.209 of the Commission's rules, i.e. –41 dBm. On this point alone the request could, and should, be denied.

B. The SafeView Design Exceeds Peak Emission Levels, When Such Excess Is Avoidable

SafeView's request for a waiver also deals with its peak emission levels. As per §15.35(b)[13], the peak emission value must not exceed 20 dB above the value as per §15.209, namely –21 dBm. The peak emissions from the SafeView device is 0 dBm and thus 21 dB in excess. SafeView's request for waiver is based on the grounds that such maximum limit will not cause harmful interference to any victim receiver. As discussed below, this premise is also in error and hence the request should be denied.

Annex 3 of the present document shows that the peak levels will in fact cause harmful interference levels for the duration of their emissions, which would cause the loss of critical bits of information in FS receivers at distances of 5 km, assuming no blockage and of 1 km assuming 10 dB blockage.

Annex 4 shows that such errors would lead to BER of $4x10^{-3}$, taking due account of the pause times built into the sweep cycle and the expected 8 second interval between passengers. Most performance specifications are defined by a given BER to exist for more than a given percentage of time. FS systems in this band are expected to provide better than BER of 10^{-6} for 99.999% of the time. Of course a rate of passenger arrival of 8 seconds does not occur all the time, even in busy airports or other venues like public buildings or concert halls, but it is likely to occur well above the .001% implied by this criterion.[14]

Based upon these results, it is clear that FS receivers within a 5 km radius of the device could be affected. Systems operating under Part 15 of the Rules are not subject to coordination and no procedures exist for identifying and eliminating sources of interference prior to installation. Hence the risk is that FS systems, operating or newly installed, could receive harmful interference.

The simplest way of proceeding is to require emission levels to conform to the §15.209 by reducing peak power by 14 dB, resulting in an e.i.r.p. of –14 dBm. This will help conformity with 15.209 for a 50 MHz bandwidth. It will, however, not resolve incompatibility with section

[13] 47 C.F.R. § 15.35(b).

[14] Winstar makes no claims to expert knowledge of statistics of arrival but bases this remark on the fact that .001% of the 24 hour day is less than one second.

15(b) for which a waiver is sought. In any case, Winstar support's HNS' proposal to include the mandatory use of absorbing materials.[15]

Winstar further submits that SafeView must make data available for review and comment that proves the absorbing materials operate effectively enough at all segments of the 24.25-30.0 GHz band to reduce the SafeView peak emission levels to at or below the maximum emissions allowed under Part 15, thus negating the need for this proceeding or for a waiver.

In addition or in supplementation, Winstar requests that the SafeView system meet the field strength limits in §15.209 using a 0.1 second or less averaging period, as stipulated in §15. 35(c), by requiring it to limit its peak emissions to –14 dBm.

C. Use of a Database to Mitigate Potential Interference

SafeView's proposal to maintain an installation database[16] is interesting yet not directly relevant. If SafeView wishes to maintain a database and they alone are obligated to supply data about their systems, that is fine. Zero mandated database obligations should be placed on exclusive license holders to accommodate Part 15 systems. Rather, as discussed above, modifications to the SafeView application and design would better protect the exclusive licensees, and if SafeView finds itself unwilling or unable to make those design modifications then SafeView is free to engage in discussions with the licensees about other possible arrangements. Otherwise, this proceeding needs to develop a much broader, additional rulemaking designed to address the larger precedential impact to exclusive license holders governed by, and including but not limited to, Part 20, Part 24, Part 90, and Part 101.

[15] *See* Hughes' Comments at 11-13.
[16] *See* Safeview Request at 11.

III. Conclusion

For the reasons described above, Winstar urges the Commission to dismiss or deny SafeView's request for a waiver of §15.31(c) and §15.35(b) of the Commission's rules.

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Annex 1

Winstar Communications, LLC Letter to FCC Office of Engineering and Technology

VIA FACSIMILE AND EMAIL

August 19, 2004

Mr. Ed Thomas
Chief, Office of Engineering and Technology
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

Dear Mr. Thomas,

Winstar Communications, LLC, in IDT Company (Winstar), an LMDS license holder, would like to take this opportunity to make an initial statement concerning SafeView, Inc.'s Request for Waiver of Section 15.35 of the Commission's Rules filed with your office August 13, 2004.

Winstar shares SafeView's concern for national security but is also concerned with maintaining the integrity of its licensed spectrum. As such, Winstar encourages the Federal Communications Commission (FCC) to first study SafeView's technology and its potential interference effects on spectrum licensees in the 24-30 GHz bands – and allow such licensee's reasonable time to also study the issue – prior to ruling upon the subject waiver request.

Winstar stands ready to assist in any study activities.

If you have any questions at this time please contact me at (202) 367-7643 or via email at jsandri@winstar.com.

Very Truly Yours,

/s/

Joseph M. Sandri,
SVP & Regulatory Counsel
Winstar Communications, LLC

Annex 2

Duty Cycle and Average Emission Level

Provision §15.35(c) stipulates that for the purposes of measuring conformity, the averaging must be done over a period of less than 0.1 second. From the information provided by SafeView, one column of antenna elements, including a 5.5 ms pause takes (5.5+2.6)x192x2+5500 microseconds, or 8.61 ms. This cycle is repeated 210 times, i.e. 1.8 seconds before the scan is complete and an operational 8 second pause period begins. Since 1.8 seconds exceeds 0.1 seconds, the averaging period should not include the 8 second pause period. Therefore, the duty cycle can be simply computed as being the ratio of the actual transmission period during a single cycle to the duration of that cycle.

For the purposes of computing the actual transmission duration, it would be appropriate to use the duration of a typical pass band of the receiver in the victim service rather than the much larger duration of the full range of emissions from 24.25-30 GHz. FS passbands in Winstar systems are typically in the order of 50 MHz carrying 45 Mb/s traffic. From the information provided, each antenna element scans sequentially at the rate of 1.1 MHz per nanosecond. Thus, transmission interval for each antenna element is thus 50/1.1 = 45.45 nanoseconds. For the 192 antenna elements running twice in each cycle, the total emission time is thus 45.45x2x192 or 17500 nanoseconds. The duty cycle is thus 10xlog(17500/8.61ms), i.e. –27 dB.

From the information provided, the peak emission level is 0 dBm. The average emission levels, under the conditions specified would thus be –27 dBm. The allowable field strength of 500 Microvolt/meter at 3 meters implies an emission level of –41 dBm. SafeView's emission level is thus 14 dB above the –41 dBm allowed under §15.209.

Annex 3

Peak Interference Into FS Systems

Winstar systems in the LMDS bands primarily are single hop systems with 30-50 cm antennas and 4 dB noise figure receivers. Its channeling plans are typically based upon 50 MHz channeling. The links are typically of short hops of 1-2 km, designed with low fade margins with adaptive power control to accommodate rain. For the purposes of analysis, the link studied is assumed to have a 5 dB rain fade margin under clear air conditions. The peak interference levels can be treated as occurring during short-term interference events which will cause bit errors when the peak interference power is sufficient to overcome the clear air fade margin, ΔM.

Thus: $C/N = (C/N)_c + \Delta M$

If we allow interference to rise to critical levels, i.e.,

$C/(N+I) = (C/N)_c$

Then $C/N - C/(N+I) = \Delta M$,

and thus, $I/N = 10 \log (10^{(\Delta M/10)} - 1)$.

For a 5 dB fade margin, the required I/N criterion is thus 3.35 dB.

The SafeView system transmitter power is 100 Microwatts and antenna gain is 10 dB. It scans in frequency from 24.25-30 GHz. The distances required for the above criterion are given below for several different values of the "Additional Attenuation" parameter.

		Winstar		
Item	**Units**	**1**	**2**	**3**
Freq	GHz	28	28	28
RF BW	MHz	50	50	50
Tx Pwr	dBW	-40	-40	-40
Tx Ant Gn	dBi	10	10	10
Rx Ant Gn	dBi	43	43	43
Rx NF	dB	4	4	4
I/N Criteria	dB	3.35	3.35	3.35
Additional Attenuation	dB	0	5	10
Rx NT	k	438.45	438.45	438.45
Rx Noise	dBW	-125.19	-125.19	-125.19
Distance	km	4.70	2.65	1.49
FS Loss	dB	134.84	129.84	124.84
I	dBW	-121.84	-121.84	-121.84
Distance	**km**	**4.70**	**2.65**	**1.49**

Annex 4

Bit Error Ratio Calculation

The bit error ratio is calculated by assuming that the victim receiver is located within the susceptible distance, as determined in Annex 2. As such, interference will always be deemed to have occurred whenever there is an emission, and none when there is a pause between emissions. The BER is thus the ratio of the transmission durations to total time.

The Table below computes the total time and the transmission duration and determines the ratio.

Ch BW	MHz	10.00	50.00
Sweep rate/Ant	MHz/ns	1.10	1.10
No. of sweeps /Ant		2.00	2.00
Swept spectrum	GHz	5.75	5.75
Dur'n in pass band	ns	9.09	45.45
No. Errored Bits/sweep		0.55	2.05
Dur'n sweep	ns	5,227.27	5,227.27
Pause between sweeps	ns	2,600.00	2,600.00
No. of sw /Ant		2.00	2.00
No. of Antennas		192.00	192.00
Dur'n sweep per column	ns	3,005,672.73	3,005,672.73
Pause between columns	ms	5.50	5.50
No. of repetitions		210.00	210.00
Total sweep time	s	1.79	1.79
Dur'n in Victim Passband	ns	733,090.91	3,665,454.55
FS Bit rate	Mb/s	12.00	45.00
No. Errored bits/Cycle		8,797.09	164,945.45
No of bits		21,434,295.27	80,378,607.27
Idle time	s	8.00	8.00
total time	s	9.79	9.79
No. of bits		117,434,295.27	440,378,607.27
BER		7.49E-05	3.75E-04